

WHAT IS CLAIMED IS:

1. A photomask, comprising:

a substrate, the substrate comprising a plurality of shielding regions and a plurality of transparent regions, wherein each transparent region is disposed between
5 two adjacent shielding regions and has one depression, and wherein the depression and the shielding region share a same edge; and

a plurality of shielding patterns disposed on the shielding regions of the substrate, wherein a sidewall of the depression is aligned with a sidewall of the shielding pattern.

2. The photomask of claim 1, wherein the shielding pattern is made form an
10 opaque material.

3. The photomask of claim 2, wherein the opaque material includes chromium.

4. The photomask of claim 2, wherein a cross-section of the depression is in a rectangle shape.

5. The photomask of claim 4, wherein a distance between a bottom surface of the
15 depression and a surface of the substrate is allows a generation of a 180-degree phase shift.

6. The photomask of claim 1, wherein the shielding pattern is made from a slightly translucent material with a transmittance rate of 5-10%.

7. The photomask of claim 4, wherein the slightly translucent material includes
20 molybdenum silicide.

8. The photomask of claim 6, wherein a cross-section of the depression is in a rectangle shape.

9. The photomask of claim 8, wherein a distance between a bottom surface of the depression and a surface of the substrate is allows a generation of a 360-degree phase shift.

10. The photomask of claim 1, wherein a cross-section of the depression is in a
5 rectangle shape.

11. The photomask of claim 1, wherein a cross-section of the depression is in a T shape.

12. A photomask, comprising:

a substrate, the substrate comprising a dense pattern region and a loose pattern
10 region, wherein the dense pattern region and the loose pattern region respectively
comprise a plurality of shielding regions and a plurality of transparent regions, wherein
each transparent region is disposed between two adjacent shielding regions and has one
depression, and wherein the depression and the shielding region share a same edge; and
a plurality of shielding patterns disposed on the shielding regions of the substrate,
15 wherein a sidewall of the depression is aligned with a sidewall of the shielding pattern.

13. The photomask of claim 12, wherein the shielding pattern is made form an opaque material.

14. The photomask of claim 13, wherein the opaque material includes chromium.

20 15. The photomask of claim 13, wherein a cross-section of the depression is in a
rectangle shape.

16. The photomask of claim 15, wherein a distance between a bottom surface of the depression and a surface of the substrate allows a generation of a 180-degree phase change.

17. The photomask of claim 12, wherein the shielding pattern is made from a slightly translucent material with a transmittance rate of 5-10%.

18. The photomask of claim 17, wherein the slightly translucent material includes molybdenum silicide.

5 19. The photomask of claim 17, wherein a cross-section of the depression is in a rectangle shape.

20. The photomask of claim 19, wherein a distance between a bottom surface of the depression and a surface of the substrate allows a generation of a 360-degree phase change.

10 21. The photomask of claim 12, wherein a cross-section of the depression is in a rectangle shape.

22. The photomask of claim 12, wherein a cross-section of the depression is in a T shape.

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